
PLANTING DENSITY IN BUSH BEANS

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During 1980 the following incident occurred. A snap bean producer in the Northern Transvaal planted seeds of the cultivar Harvester and produced an average yield of 9 t/ha by hand picking at a density of 50,000 plants/ha. His next plantings grew exceedingly well at a density of 200,000 plants/ha. Before harvesting them, a private firm sprayed a weedkiller from an aeroplane on the adjacent farm to destroy indigenous bush. The weedkiller was blown by the winds onto the bean fields and destroyed them completely.

This incident ended in a court case. The two parties visited the Horticultural Research Institute for advice with regard to the producer's loss. The producer claimed a loss of 36 t/ha; a theoretical determination based on the yield obtained from the first planting at 50,000 plants/ha.

With reference to information obtained from literature and previous spacing trials, we advised them that it is impossible to obtain such a high yield, but a maximum of 20 t/ha by hand picking was more feasible. A complete set of figures to prove this could not be supplied.

A trial was therefore prepared and the seeds planted at the Horticultural Research Institute on 25 September 1980 (spring). Ten planting densities were used varying from 59 432 plants/ha (=280 x 600 mm) to 555,327 plants/ha (=30 x 600 mm). Our cultivar Rolito was used and 4 replications were involved. The beans were harvested with the help of a team of labourers on 3, 5, and 9 December.

Results: i) The yield obtained is given in Fig. 1. No significant difference in yield were found at densities of 138,827 plants/ha (=120 x 160 mm) and more. A theoretical line was drawn based on the yield obtained from the lowest plant density which corresponds more or less to the expected yield claimed by the producer. ii) The number of pods per plant and the mass of the plants increased in low density plantings. The number of pods per plant varied from 44 in the lowest to 8 in the highest density planting. iii) The height of the plants, height at which the pods were borne and the effect on weeds were better in high than in low density plantings.

The tendency of bean plants to bear more pods when they have more space is obviously increased under excellent growing conditions. Bean breeders use this phenomenon to produce more seeds in the F_1 - generation.

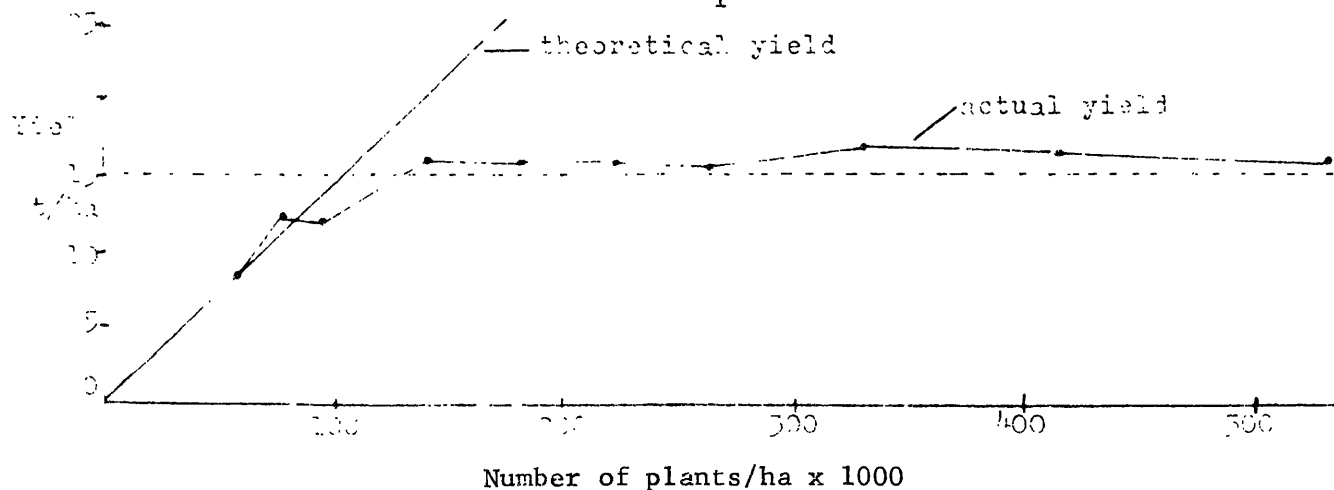


Fig. 1 - Theoretical and actual yield at different plant densities